

CLAIMS:

1. A method for extracting and processing video content to be emulated by an ambient light source (88), using an interframe interpolation process, comprising:

[1] Extracting color information from a video signal (AVS) that encodes at least some of said video content in said rendered color space by decoding said video signal into a set of frames (F), extracting said color information from only selected extraction frames (F₁, F_N), and performing interframe interpolation between said extraction frames to yield interpolated frames (G₂, G₃ +), said color information then newly derived from said extraction frames and said interpolated frames.

2. The method of claim 1, additionally comprising:

[2] Transforming said color information to an unrendered color space (XYZ);

[3] Transforming said color information from said unrendered color space to a second rendered color space (R'G'B') so formed as to allow driving said ambient light source.

3. The method of claim 1, wherein step [1] additionally comprises extracting an average color (R_{AVG}) from said color information.

4. The method of claim 1, wherein step [1] additionally comprises at least one extraction of said color information from an extraction region (R1).

5. The method of claim 4, wherein step [1] additionally comprises using said extraction of said color information to broadcast ambient light (L4) from said ambient light source adjacent said extraction region.

6. The method of claim 1, wherein step [1] additionally comprises assessing a chrominance difference between extraction frames; and setting a frame extraction rate based on said chrominance difference.

7. The method of claim 2, additionally comprising performing a gamma correction to said second rendered color space.

8. The method of claim 2, wherein steps [2] and [3] additionally comprise matrix transformations of primaries (**RGB**, **R'G'B'**) of said rendered color space and second rendered color space to said unrendered color space using first and second tristimulus primary matrices (**M**₁, **M**₂); and deriving a transformation of said color information into said second rendered color space (**R'G'B'**) by matrix multiplication of said primaries of said rendered color space, said first tristimulus matrix, and the inverse of said second tristimulus matrix (**M**₂)⁻¹.

9. The method of claim 8, wherein said unrendered color space is one of CIE XYZ; ISO RGB defined in ISO Standard 17321; Photo YCC; and CIE LAB.

10. The method of claim 8, wherein step [1] additionally comprises extracting an average color (**R**_{AVG}) from said color information.

11. The method of claim 10, wherein step [1] additionally comprises at least one extraction of said color information from an extraction region (**R**₁).

12. The method of claim 11, wherein step [1] additionally comprises using said extraction of said color information to broadcast ambient light (**L**₄) from said ambient light source adjacent said extraction region.

13. The method of claim 2, wherein steps [1], [2], and [3] are substantially synchronous with said video signal (**AVS**).

14. The method of claim 2, additionally comprising broadcasting ambient light (**L**₁) from said ambient light source using said color information in said second rendered color space.

15. A method for extracting and processing border region video content from a rendered color space (**RGB**) to be emulated by an ambient light source (**88**) using an interframe interpolation process, comprising:

[1] Extracting color information from a video signal (**AVS**) that encodes at least some of said video content in said rendered color space by decoding said video signal into a set of frames (**F**), extracting said color information from only selected extraction frames (**F₁, F_N**), and performing interframe interpolation between said extraction frames to yield interpolated frames (**G₂, G₃ +**), said color information then newly derived from said extraction frames and said interpolated frames;

[2] Extracting an average color (**R_{AVG}**) from said color information from an extraction region (**R1**) in each of said individual frames;

[3] Transforming said average color to an unrendered color space (**XYZ**);

[4] Transforming said average color from said unrendered color space to a second rendered color space (**R'G'B'**) so formed as to allow driving said ambient light source;

[5] using said average color to broadcast ambient light (**L4**) from said ambient light source adjacent said extraction region.

16. The method of claim **15**, wherein steps [1], [2], [3], [4], and [5] are substantially synchronous with said video signal (**AVS**).

17. The method of claim **15**, wherein steps [3] and [4] additionally comprise matrix transformations of primaries (**RGB, R'G'B'**) of said rendered color space and second rendered color space to said unrendered color space using first and second tristimulus primary matrices (**M₁, M₂**); and deriving a transformation of said color information into said second rendered color space (**R'G'B'**) by matrix multiplication of said primaries of said rendered color space, said first tristimulus matrix, and the inverse of said second tristimulus matrix (**M₂**)⁻¹.

18. A method for extracting and processing border region video content from a rendered color space (**RGB**) to be emulated by an ambient light source (**88**), using a colorimetric estimate, and employing an interframe interpolation process, comprising:

[1] Extracting color information from a video signal (AVS) that encodes at least some of said video content in said rendered color space by decoding said video signal into a set of frames (F), extracting said color information from only selected extraction frames (F_1, F_N), and performing interframe interpolation between said extraction frames to yield interpolated frames ($G_2, G_3 +$), said color information then newly derived from said extraction frames and said interpolated frames;

[2] Extracting a colorimetric estimate from said color information from an extraction region (R1) in each of said individual frames;

[3] Transforming said colorimetric estimate to an unrendered color space (XYZ);

[4] Transforming said colorimetric estimate from said unrendered color space to a second rendered color space ($R'G'B'$) so formed as to allow driving said ambient light source;

[5] using said colorimetric estimate to broadcast ambient light (L4) from said ambient light source adjacent said extraction region.

19. The method of claim 18, wherein steps [1], [2], [3], [4], and [5] are substantially synchronous with said video signal (AVS).

20. The method of claim 18, wherein steps [3] and [4] additionally comprise matrix transformations of primaries (RGB, $R'G'B'$) of said rendered color space and second rendered color space to said unrendered color space using first and second tristimulus primary matrices (M_1, M_2); and deriving a transformation of said color information into said second rendered color space ($R'G'B'$) by matrix multiplication of said primaries of said rendered color space, said first tristimulus matrix, and the inverse of said second tristimulus matrix (M_2^{-1}).